

**AMENDMENTS TO THE CLAIMS**

Please amend the claims as follows.

1. (Original) A method for measuring high-energy radiation flux, comprising:  
applying a voltage pulse for a predetermined time to electrodes in an ion chamber,  
wherein the ion chamber is filled with a gas capable of forming charged ions by  
~~the~~ high-energy radiation;  
measuring an ion current signal related to ion currents induced by the voltage pulse while  
the voltage pulse is being applied to the electrodes;  
measuring a leakage current signal after the voltage pulse has been turned off and after  
ion transport has stopped; and  
determining a magnitude of the high-energy radiation flux dependent ~~based on~~ the ion  
current signal and the leakage current signal.
2. (Currently Amended) The method of claim 1, ~~further comprising measuring a leakage~~  
~~current signal~~, wherein the determining the magnitude of the high-energy radiation flux  
comprises subtracting the leakage current signal from the ion current signal.
3. (Cancelled)
4. (Currently Amended) The method of claim 1 ~~[[2]]~~, further comprising determining a gain of  
an amplifier of the ion current signal and the leakage current signal.
5. (Currently Amended) The method of claim 4, wherein the determining the gain of the  
amplifier comprises applying a ramping voltage ~~current~~ to the electrodes in the ion chamber.
6. (Currently Amended) The method of claim 4, wherein one of ~~the gain is used to adjust a~~  
magnitude of the ion current signal ~~[[or ]]~~ and a magnitude of the leakage current signal is  
adjusted dependent on the gain of the amplifier.

7. (Currently Amended) The method of claim 6, wherein the subtracting the leakage current signal from the ion current signal is dependent on one of ~~uses~~ a magnitude-adjusted ion current signal ~~[[or ]]~~and a magnitude-adjusted leakage current signal.
8. (Currently Amended) The method of claim 1, further comprising determining a gain of an amplifier of the ion current signal and the leakage current signal, wherein ~~the determining~~ the magnitude of the high-energy radiation flux is proportional to ~~based on~~ the ion current signal and the gain of the amplifier.
9. (Currently Amended) The method of claim 8, wherein the determining the gain of the amplifier comprises applying a ramping ~~current~~ voltage to the electrodes.
10. (Withdrawn) A system for measuring high-energy radiation, comprising:
  - an ion chamber having an ionizable material that can be ionized by the high-energy radiation;
  - two electrodes disposed in the ion chamber; and
  - a circuit connected to the two electrodes, wherein the circuit is configured to provide a voltage pulse to the two electrodes and to measure an electrical signal across the two electrodes.
11. (Withdrawn) The system of claim 10, wherein the ionizable material comprises one selected from helium-3, boron trifluoride, lithium-6, uranium-233, uranium-235, and plutonium-239.
12. (Withdrawn) The system of claim 10, further comprising a target chamber comprising a hydrogenous material, wherein the target chamber is disposed proximate the ion chamber, and wherein the high-energy radiation comprises neutron radiation.
13. (Withdrawn) A method for measuring high-energy radiation using the system of claim 10.